

IN THE CLAIMS:

1. (Original) A method for processing packets in a communications device, the method comprising the steps of:

retrieving a packet from a packet buffer memory by a packet processing unit, wherein the packet processing unit is one of a plurality of packet processing units, wherein the packet buffer memory is one of a plurality of packet buffer memories, and wherein each packet buffer memory is connected with one of the plurality of packet processing units;

determining a packet type for the packet;

forwarding the packet to a Routing Table Processing Unit if the packet type is determined to be a routing information packet;

retrieving forwarding information from a routing table if the packet is determined not to be a routing information packet, wherein the routing table is stored in a second shared memory connected to the plurality of packet processing units;

updating the packet with the retrieved forwarding information; and

forwarding the updated packet.

2. (Original) A method for processing packets in a communications device, the method comprising the steps of:

retrieving a packet from a first shared memory by a packet processing unit, wherein the packet processing unit is one of a plurality of packet processing units connected to the first shared memory;

determining a packet type for the packet;

forwarding the packet to a Routing Table Processing Unit if the packet type is determined to be a routing information packet;

retrieving forwarding information from a routing table if the packet is determined not to be a routing information packet, wherein the routing table is stored in a second shared memory connected to the plurality of packet processing units;

updating the packet with the retrieved forwarding information; and

forwarding the updated packet.

3. (Original) The method of claim 2 wherein a packet is forwarded by using a switch fabric connected to the plurality of packet processing units.
4. (Currently ~~amended~~) The method of claim ~~[[4]]~~ 3 wherein the routing table processing unit is connected to the switch fabric.
5. (Original) The method of claim 2 further comprising:
 - in response to receiving a routing information packet, locking a portion of the routing table by the routing table processing unit;
 - updating the locked portion of the routing table with information from the routing table information packet; and
 - unlocking the locked portion of the routing table.
6. (Original) The method of claim 2 wherein the step of retrieving forwarding information from a routing table further comprises:
 - searching the routing table;
 - determining if a portion of the routing table is locked;
 - waiting for the portion of the routing table to be unlocked; and
 - retrieving the forwarding information when the portion of the routing table is unlocked.
7. (Original) The method of claim 2 wherein the communications device interfaces with a wavelength division multiplexed (WDM) enabled network, and wherein the first shared memory stores packets transmitted on a single wavelength on the WDM-enabled network.
8. (Original) The method of claim 7 further comprising:
 - providing differentiated service processing of packets based on a placement of a packet in one of a plurality of shared packet buffer memories, wherein the first shared memory is one of the plurality of shared packet buffer memories.

9. (Original) The method of claim 8 wherein the differentiated service processing comprises quality-of-service differentiation.

10. (Currently ~~amended~~) An apparatus for processing packets in a communications device, the apparatus comprising:

~~a plurality of packet processing units connected to a first shared memory and connected to a plurality of packet buffer memories, wherein the first shared memory stores a routing table, and wherein the plurality of packet buffer memories store packets; and~~

~~a routing table processing unit connected to the first shared memory~~

a first retrieving means for retrieving a packet from a packet buffer memory by a packet processing unit, wherein the packet processing unit is one of a plurality of packet processing units, wherein the packet buffer memory is one of a plurality of packet buffer memories, and wherein each packet buffer memory is connected with one of the plurality of packet processing units;

determining means for determining a packet type for the packet;

a first forwarding means for forwarding the packet to a Routing Table Processing Unit if the packet type is determined to be a routing information packet;

a second retrieving means for retrieving forwarding information from a routing table if the packet is determined not to be a routing information packet, wherein the routing table is stored in a second shared memory connected to the plurality of packet processing units;

updating means for updating the packet with the retrieved forwarding information; and

a second forwarding means for forwarding the updated packet.

~~11.~~ (Canceled)

12. (Currently ~~amended~~) The apparatus of claim ~~[[11]] 14~~ further comprising a switch fabric connected to the plurality of packet processing units.

13. (Original) The apparatus of claim 12 wherein the routing table processing unit is connected to the switch fabric.

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14. (Currently amended) ~~The apparatus of claim 11 wherein a packet processing unit further comprises~~ An apparatus for processing packets in a communications device, the apparatus comprising:

a first retrieving means for retrieving a packet from a first shared memory by a packet processing unit, wherein the packet processing unit is one of a plurality of packet processing units connected to the first shared memory;

determining means for determining a packet type for a packet retrieved from the first shared memory;

B a first forwarding means for forwarding the retrieved packet to ^athe routing table processing unit if the packet type is determined to be a routing information packet;

a second retrieving means for retrieving means for retrieving forwarding information from a routing table if the retrieved packet is determined not to be a routing information packet;

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B1 updating means for updating the retrieved ^{B1}packet with the retrieved forwarding information; and

a second forwarding means for forwarding the updated packet.

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B 15. (Original) The apparatus of claim ¹¹14 wherein ^{second}the retrieving means further comprises:

searching means for searching the routing table;

determining means for determining if a portion of the routing table is locked;

waiting means for waiting for the portion of the routing table to be unlocked before retrieving the forwarding information.

¹⁵
16. (Currently amended) The apparatus of claim ¹¹[[11]] ¹¹14 wherein the routing table processing unit further comprises:

locking means for locking a portion of the routing table in response to receiving a routing information packet;

updating means for updating the locked portion of the routing table with information from the routing table information packet; and

unlocking means for unlocking the locked portion of the routing table.

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~~17.~~ (Currently amended) The apparatus of claim ¹¹ ~~14~~ wherein the communications device interfaces with a wavelength division multiplexed (WDM) enabled network, and wherein the first shared memory stores packets transmitted on a single wavelength on the WDM-enabled network.

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~~18.~~ (Currently amended) The apparatus of claim ¹⁶ ~~17~~ further comprising:
a plurality of shared packet buffer memories, wherein the first shared memory is one of the plurality of shared packet buffer memories; and
differentiated processing means for providing differentiated service processing of packets based on a placement of a packet in one of the plurality of shared packet buffer memories.

¹⁸
~~19.~~ (Original) A computer program product in a computer readable medium for processing packets in a communication system, the computer program product comprising:

first instructions for retrieving a packet from a first shared memory by a packet processing unit, wherein the packet processing unit is one of a plurality of packet processing units connected to the first shared memory;

second instructions for determining a packet type for the packet;

third instructions for forwarding the packet to a routing table processing unit if the packet type is determined to be a routing information packet;

fourth instructions for retrieving forwarding information from a routing table if the packet is determined not to be a routing information packet, wherein the routing table is stored in a second shared memory connected to the plurality of packet processing units;

fifth instructions for updating the packet with the retrieved forwarding information; and

sixth instructions for forwarding the updated packet.

¹⁹
20. (Original) The computer program product of claim ¹⁸~~19~~ further comprising:
seventh instructions for locking a portion of the routing table by the routing table
processing unit in response to receiving a routing information packet;
eighth instructions for updating the locked portion of the routing table with
information from the routing table information packet; and
ninth instructions for unlocking the locked portion of the routing table.

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21. (Original) The computer program product of claim ¹⁸~~19~~ wherein the fourth
instructions for retrieving forwarding information from a routing table further comprises:
tenth instructions for searching the routing table;
eleventh instructions for determining if a portion of the routing table is locked;
twelfth instructions for waiting for the portion of the routing table to be unlocked;
and
thirteenth instructions for retrieving the forwarding information when the portion
of the routing table is unlocked.

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22. (Original) The computer program product of claim ¹⁸~~19~~ wherein the
communication system comprises a wavelength division multiplexed (WDM) enabled
network, and wherein the first shared memory stores packets transmitted on a single
wavelength on the WDM-enabled network.